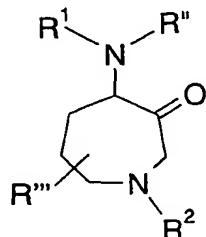


We claim:

1. A method of inhibiting cathepsin S, comprising administering to a patient in need thereof an effective amount of a compound of Formula I:

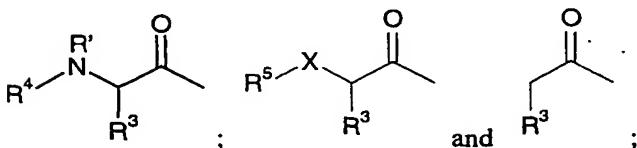
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I

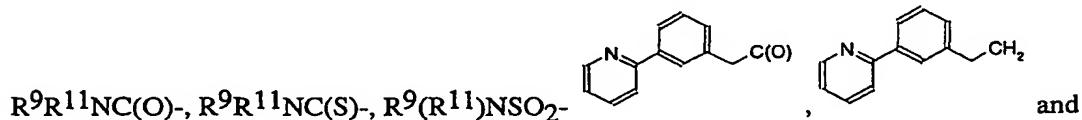
wherein:

R¹ is selected from the group consisting of:

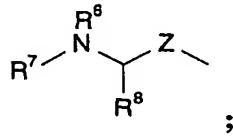


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R² is selected from the group consisting of: H, C₁₋₆alkyl, C₃₋₆cycloalkyl-C₀₋₆alkyl, Ar-C₀₋₆alkyl, Het-C₀₋₆alkyl, R⁹C(O)-, R⁹C(S)-, R⁹SO₂-, R⁹OC(O)-,



15



R³ is selected from the group consisting of: H, C₁₋₆alkyl, C₃₋₆cycloalkyl-C₀₋₆alkyl, C₂₋₆alkenyl, C₂₋₆alkynyl, Het-C₀₋₆alkyl, Ar-C₀₋₆alkyl, Ar-Ar-C₀₋₆alkyl, Ar-Het-C₀₋₆alkyl, Het-Ar-C₀₋₆alkyl, and Het-Het-C₀₋₆alkyl;

20

R³ and R' may be connected to form a pyrrolidine, piperidine or morpholine ring;

R⁴ is selected from the group consisting of: H, C₁₋₆alkyl, C₃₋₆cycloalkyl-C₀₋₆alkyl, Ar-C₀₋₆alkyl, Het-C₀₋₆alkyl, R⁵C(O)-, R⁵C(S)-, R⁵SO₂-, R⁵OC(O)-, R⁵R¹³NC(O)-, and R⁵R¹³NC(S)-;

R^5 is selected from the group consisting of: H, C₁₋₆alkyl, C₂₋₆alkenyl, C₂₋₆alkynyl, C₃₋₆cycloalkyl-C₀₋₆alkyl, Ar-C₀₋₆alkyl and Het-C₀₋₆alkyl;

R^6 is selected from the group consisting of: H, C₁₋₆alkyl, C₃₋₆cycloalkyl-C₀₋₆alkyl, Ar-C₀₋₆alkyl, and Het-C₀₋₆alkyl;

5 R^7 is selected from the group consisting of: H, C₁₋₆alkyl, C₃₋₆cycloalkyl-C₀₋₆alkyl, Ar-C₀₋₆alkyl, Het-C₀₋₆alkyl, R¹⁰C(O)-, R¹⁰C(S)-, R¹⁰SO₂-, R¹⁰OC(O)-, R¹⁰R¹⁴NC(O)-, and R¹⁰R¹⁴NC(S)-;

R^8 is selected from the group consisting of: H, C₁₋₆alkyl, C₂₋₆alkenyl, C₂₋₆alkynyl, Het-C₀₋₆alkyl and Ar-C₀₋₆alkyl;

10 R^9 is selected from the group consisting of: C₁₋₆alkyl, C₃₋₆cycloalkyl-C₀₋₆alkyl, Ar-C₀₋₆alkyl and Het-C₀₋₆alkyl;

R^{10} is selected from the group consisting of: C₁₋₆alkyl, C₃₋₆cycloalkyl-C₀₋₆alkyl, Ar-C₀₋₆alkyl and Het-C₀₋₆alkyl;

15 R^{11} is selected from the group consisting of: H, C₁₋₆alkyl, Ar-C₀₋₆alkyl, and Het-C₀₋₆alkyl;

R^{12} is selected from the group consisting of: H, C₁₋₆alkyl, Ar-C₀₋₆alkyl, and Het-C₀₋₆alkyl;

R^{13} is selected from the group consisting of: H, C₁₋₆alkyl, Ar-C₀₋₆alkyl, and Het-C₀₋₆alkyl;

20 R^{14} is selected from the group consisting of: H, C₁₋₆alkyl, Ar-C₀₋₆alkyl, and Het-C₀₋₆alkyl;

R' is selected from the group consisting of: H, C₁₋₆alkyl, Ar-C₀₋₆alkyl, and Het-C₀₋₆alkyl;

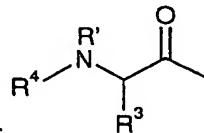
25 R'' is selected from the group consisting of: H, C₁₋₆alkyl, Ar-C₀₋₆alkyl, or Het-C₀₋₆alkyl;

R''' is selected from the group consisting of: H, C₁₋₆alkyl, C₃₋₆cycloalkyl-C₀₋₆alkyl, Ar-C₀₋₆alkyl, and Het-C₀₋₆alkyl;

X is selected from the group consisting of: CH₂, S, and O;

Z is selected from the group consisting of: C(O) and CH₂;

30 and pharmaceutically acceptable salts, hydrates and solvates thereof.



2. A method according to Claim 1 wherein in said compound R¹ is

3. A method according to Claim 2 wherein in said compound R³ is C₃₋₆cycloalkyl-C₀₋₆alkyl.
4. A method according to Claim 3 wherein in said compound R³ is cyclohexylmethyl.
5. A method according to Claim 2 wherein in said compound R⁴ is R⁵C(O)-.
6. A method according to Claim 5 wherein in said compound R⁵ is selected from the group consisting of: C₁₋₆alkyl, C₃₋₆cycloalkyl-C₀₋₆alkyl, Ar-C₀₋₆alkyl and Het-C₀₋₆alkyl.
10. A method according to Claim 6 wherein in said compound R⁵ is selected from the group consisting of:
 - furanyl;
 - benzofuranyl;
 - 15 thiophenyl;
 - furo[3,2-b]-pyridine-2-yl;
 - thiazolyl;
 - phenyl;
 - cyclobutyl;
 - 20 cyclopentyl;
 - tetrahydrofuranyl;
 - selenophenyl; and
 - thieno[3,2-b]thiophenyl.
- 25 8. A method according to Claim 6 wherein in said compound R⁵ is selected from the group consisting of:
 - furan-2-yl and furan-3-yl;
 - benzofuran-2-yl;
 - thiophene-3-yl and thiophene-2-yl;
 - 30 furo[3,2-b]-pyridine-2-yl;
 - thiazole-5-yl;
 - tetrahydrofuran-2-yl;
 - selenophene-2-yl; and
 - thieno[3,2-b]thiophene-2-yl.

9. A method according to Claim 6 wherein in said compound R⁵ is selected from the group consisting of:

aryl substituted furanyl;

C₁₋₆alkoxy substituted benzofuranyl;

5 Het-C₀₋₆alkyl-thiophenyl, C₁₋₆alkyl-thiophenyl and C₁₋₆alkoxy-thiophenyl,

C₁₋₆alkyl-furo[3,2-b]-pyridine-2-yl,

Het-C₀₋₆alkyl-thiazolyl; and

halogen substituted phenyl.

10 10. A method according to Claim 6 wherein in said compound R⁵ is selected from the group consisting of:

5-(3-trifluoromethyl-phenyl)-furan-2-yl and 5-(4-chloro-phenyl)-furan-2-yl;

5,6-dimethoxy-benzofuran-2-yl and 5-(2-morpholin-4-yl-ethoxy)benzofuran-2-yl;

5-pyridin-2-yl-thiophene-2-yl, 5-methyl-thiophene-2-yl, 3-methyl-thiophene-2-yl;

15 and 3-ethoxy-thiophene-2-yl;

3-methyl-furo[3,2-b]-pyridine-2-yl;

4-methyl-2-pyridin-2-yl-thiazole-5-yl; and

4-bromophenyl.

20 11. A method according to Claim 1 wherein in said compound R' is H.

12. A method according to Claim 1 wherein in said compound R" is H.

13. A method according to Claim 1 wherein in said compound R"" is selected from the group consisting of: H and C₁₋₆alkyl.

14. A method according to Claim 1 wherein in said compound R" is H and R"" is selected from the group consisting of: H and C₁₋₆alkyl.

30 15. A method according to Claim 13 wherein in said compound R"" is H.

16. A method according to Claim 13 wherein in said compound R"" is C₁₋₆alkyl.

17. A compound according to Claim 16 wherein C₁₋₆alkyl is selected from the group 35 consisting of: 5-, 6- and 7-C₁₋₆alkyl.

18. A compound according to Claim 17 wherein 5-, 6- and 7-C₁-6alkyl is selected from the group consisting of: 5-, 6- or 7- methyl, -ethyl, -propyl, -butyl, -pentyl, and -hexyl.

5 19. A compound according to Claim 21 wherein 5-, 6- and 7-C₁-6alkyl is selected from the group consisting of: 5-, 6- and 7-methyl.

20. A compound according to Claim 16 wherein C₁-6alkyl is selected from the group consisting of: 6- and 7-C₁-6alkyl.

10 21. A compound according to Claim 20 wherein 6- and 7-C₁-6alkyl is selected from the group consisting of: 6- or 7- methyl, -ethyl, -propyl, -butyl, -pentyl, and -hexyl.

22. A compound according to Claim 21 wherein 6- and 7-C₁-6alkyl is selected from the group consisting of: 6- and 7-methyl.

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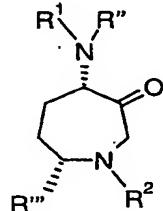
23. A compound according to Claim 16 wherein C₁-6alkyl is 7-C₁-6alkyl.

24. A compound according to Claim 23 wherein 7-C₁-6alkyl is selected from the group consisting of: 7- methyl, -ethyl, -propyl, -butyl, -pentyl, and -hexyl.

20

25. A compound according to Claim 24 wherein 7-C₁-6alkyl is 7-methyl.

26. A compound according to Claim 16 of Formula Ia:



wherein R'' is *cis*-7-C₁-6alkyl.

27. A compound according to Claim 26 wherein R''' is *cis*-7-methyl.

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28. A method according to Claim 1 wherein in said compound R² is R⁹SO₂.

29. A method according to Claim 28 wherein in said compound R⁹ is Het-C₀₋₆alkyl.

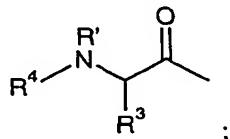
30. A method according to Claim 29 wherein Het-C₀₋₆alkyl is selected from the group
5 consisting of: pyridinyl and 1-oxy-pyridinyl.

31. A method according to Claim 30 wherein R⁹ is pyridin-2-yl.

32. A method according to Claim 1 wherein in said compound:

10

R¹ is



R² is R⁹SO₂;

R³ is C₃₋₆cycloalkyl-C₀₋₆alkyl;

15

R⁴ is R⁵C(O);

R⁵ is Het-C₀₋₆alkyl;

R⁹ is Het-C₀₋₆alkyl;

R' is H

R" is H; and

20

R''' is C₁₋₆alkyl.

33. A method according to Claim 1 wherein in said compound:

R³ is cyclohexylmethyl;

25

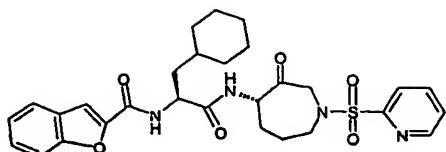
R⁵ is selected from the group consisting of: furan-2-yl and thiophene-3-yl;

R⁹ is pyridin-2-yl; and

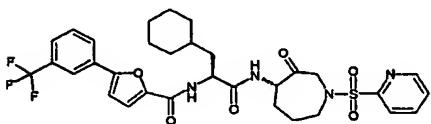
R''' is 7- methyl.

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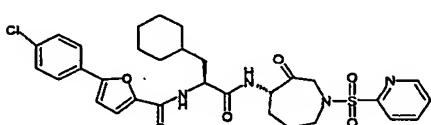
34. A method according to Claim 1 wherein said compound is selected from the group
consisting of:



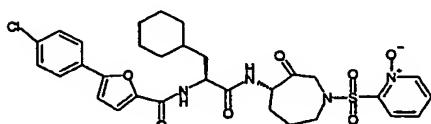
Benzofuran-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



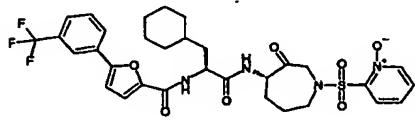
5 5-(3-Trifluoromethyl-phenyl)-furan-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



10 5-(4-Chloro-phenyl)-furan-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;

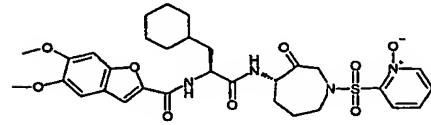


15 5-(4-Chloro-phenyl)-furan-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(1-oxy-pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;

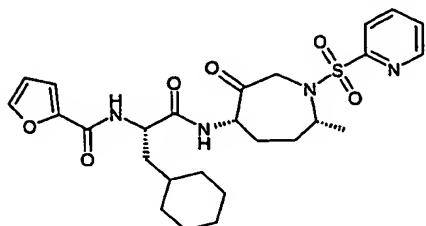


20 5-(3-Trifluoromethyl-phenyl)-furan-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(1-oxy-pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;

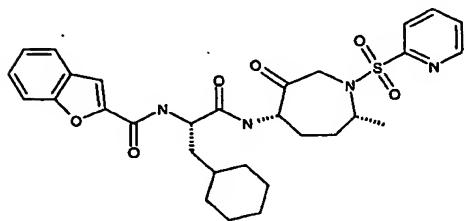
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5,6-Dimethoxy-benzofuran-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(1-oxy-pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide; and

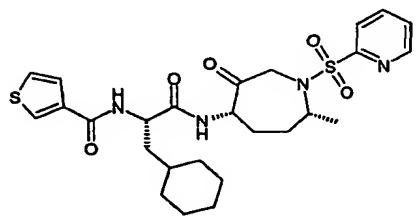


5 furan-2-carboxylic acid {(S)-2-cyclohexyl-1-[(4S,7R)-7-methyl-3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



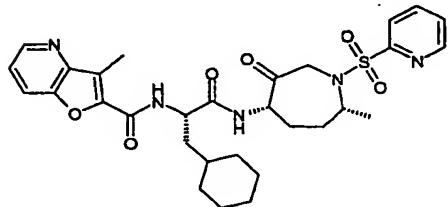
benzofuran-2-carboxylic acid {(S)-2-cyclohexyl-1-[(4S,7R)-7-methyl-3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;

10

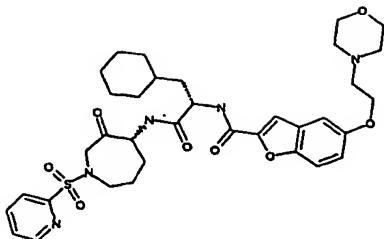


thiophene-3-carboxylic acid {(S)-2-cyclohexyl-1-[(4S,7R)-7-methyl-3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;

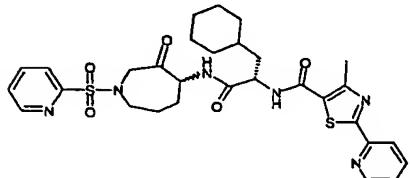
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3-methyl-furo[3,2-b]- pyridine-2-carboxylic acid {(S)-2-cyclohexyl-1-[(4S,7R)-7-methyl-3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;

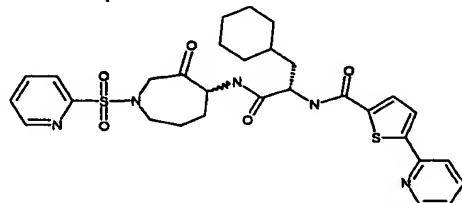


5-(2-morpholin-4-yl-ethoxy)-benzofuran-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



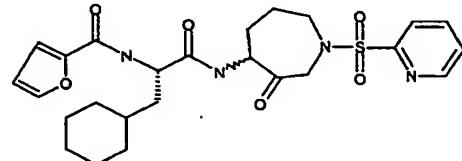
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4-methyl-2-pyridin-2-yl-thiazole-5-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



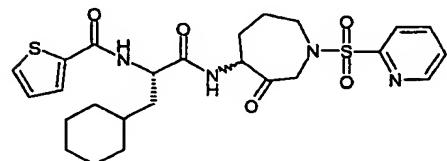
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5-pyridin-2-yl-thiophene-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;

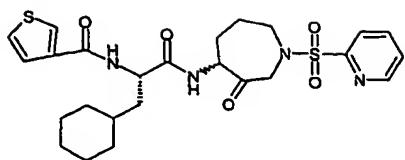


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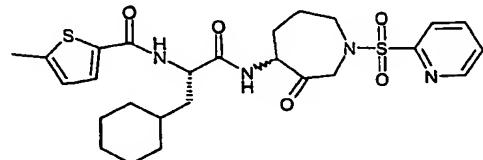
furan-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



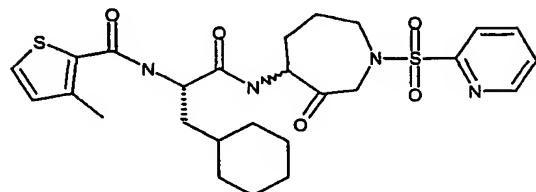
thiophene-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



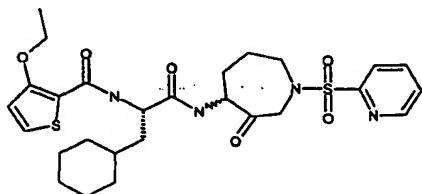
5 thiophene-3-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



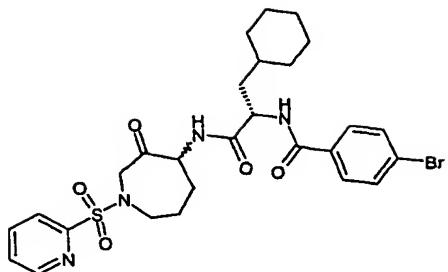
10 5-methyl-thiophene-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



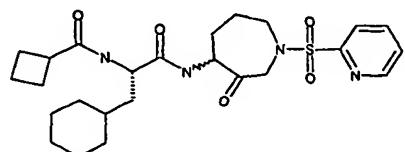
15 3-methyl-thiophene-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



20 3-ethoxy-thiophene-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;

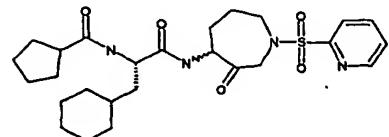


4-bromo-N-((S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl)-benzamide;

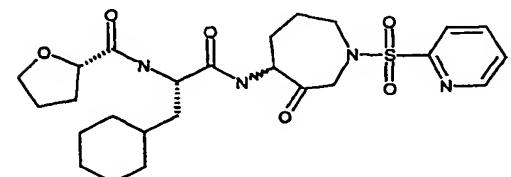


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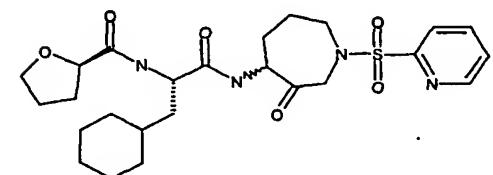
cyclobutanecarboxylic acid ((S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl)-amide;



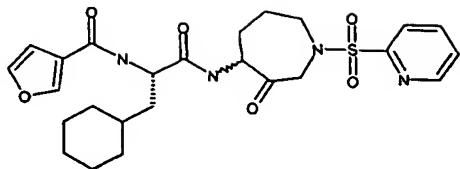
10 cyclopentanecarboxylic acid ((S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl)-amide;



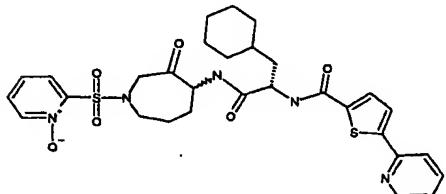
15 (S)-tetrahydro-furan-2-carboxylic acid ((S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl)-amide;



(R)-tetrahydro-furan-2-carboxylic acid ((S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl)-amide;

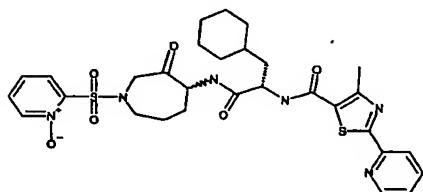


furan-3-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



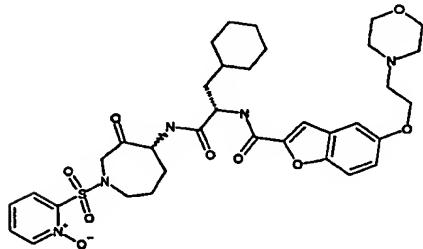
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5-pyridin-2-yl-thiophene-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(1-oxy-pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



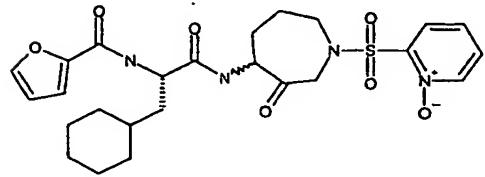
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4-methyl-2-pyridin-2-yl-thiazole-5-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(1-oxy-pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;

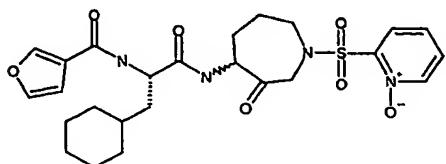


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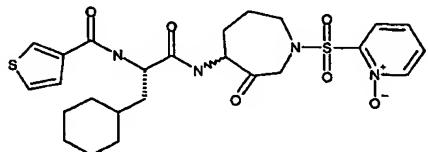
5-(2-morpholin-4-yl-ethoxy)-benzofuran-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(1-oxy-pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



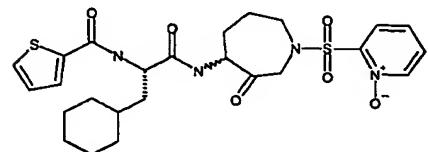
furan-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(1-oxy-pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



5 furan-3-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(1-oxy-pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;

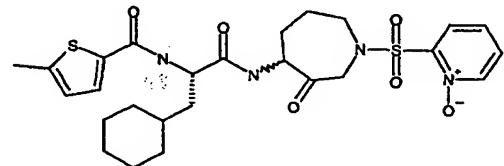


10 thiophene-3-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(1-oxy-pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



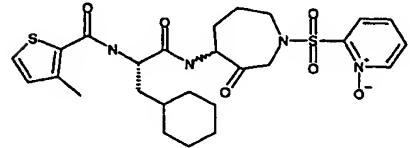
thiophene-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(1-oxy-pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;

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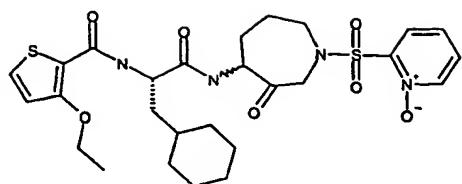


5-methyl-thiophene-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(1-oxy-pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;

20

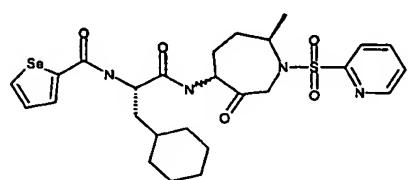


3-methyl-thiophene-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(1-oxy-pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;

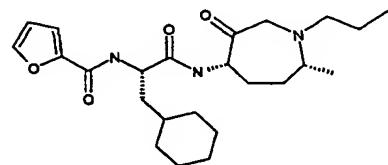


3-ethoxy-thiophene-2-carboxylic acid [(S)-2-cyclohexyl-1-[3-oxo-1-(1-oxy-pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl]-amide;

5



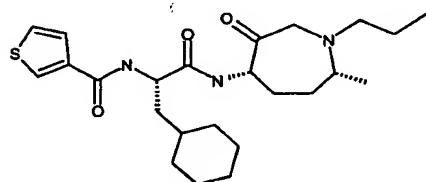
selenophene-2-carboxylic acid [(S)-2-cyclohexyl-1-[7-methyl-3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl]-amide;



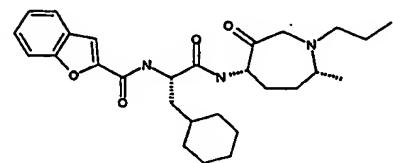
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furan-2-carboxylic acid [(S)-2-cyclohexyl-1-((4S,7R)-7-methyl-3-oxo-1-propyl-azepan-4-ylcarbamoyl)-ethyl]-amide;

15

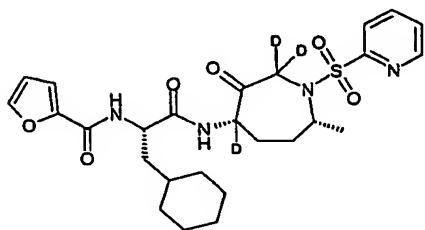


thiophene-3-carboxylic acid [(S)-2-cyclohexyl-1-((4S,7R)-7-methyl-3-oxo-1-propyl-azepan-4-ylcarbamoyl)-ethyl]-amide;



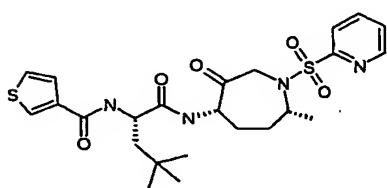
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benzofuran-2-carboxylic acid [(S)-2-cyclohexyl-1-((4S,7R)-7-methyl-3-oxo-1-propyl-azepan-4-ylcarbamoyl)-ethyl]-amide;

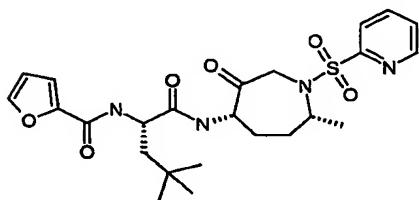


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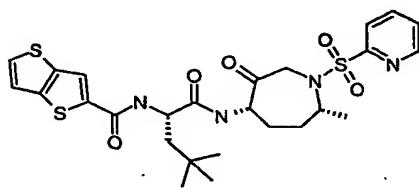
2,2,4-trideutero-Furan-2-carboxylic acid [(S)-2-cyclohexyl-1-((4S,7R)-7-methyl-3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl)-ethyl]-amide;



10 thiophene-3-carboxylic acid [(S)-3,3-dimethyl-1-((4S,7R)-7-methyl-3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl)-butyl]-amide;

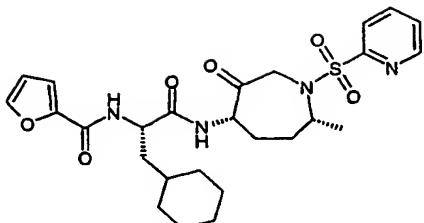


15 furan-2-carboxylic acid [(S)-3,3-dimethyl-1-((4S,7R)-7-methyl-3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl)-butyl]-amide; and



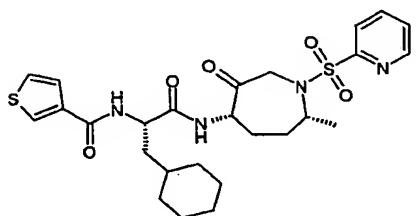
20 thieno[3,2-b] thiophene-2-carboxylic acid [(S)-3,3-dimethyl-1-((4S,7R)-7-methyl-3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl)-butyl]-amide.

35. A compound according to Claim 34 selected from the group consisting of:



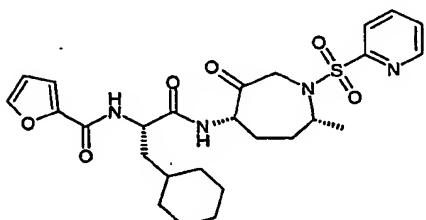
furan-2-carboxylic acid ((S)-2-cyclohexyl-1-[(4S,7R)-7-methyl-3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl)-amide; and

5



thiophene-3-carboxylic acid ((S)-2-cyclohexyl-1-[(4S,7R)-7-methyl-3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl)-amide.

10 36. A compound according to Claim 35 which is:



furan-2-carboxylic acid ((S)-2-cyclohexyl-1-[(4S,7R)-7-methyl-3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl)-amide.

15

37. A method of treatment and prevention of an autoimmune disease comprising inhibiting overexpression of cathepsin S by administering to a patient in need thereof an effective amount of a compound according to any one of Claims 1 to 36.

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38. A method according to Claim 37 wherein said disease is selected from the group consisting of : rheumatoid arthritis, multiple sclerosis, juvenile-onset diabetes, systemic lupus erythematosus, discoid lupus erythematosus, pemphigus vulgaris, pemphigoid, Grave's disease, myasthenia gravis, Hashimoto's thyroiditis, scleroderma, dermatomyositis,

Addison's disease, pernicious anemia, primary myxoedema, thyrotoxicosis, autoimmune atrophic gastritis, stiff-man syndrome, Goodpasture's syndrome, sympathetic ophthalma, phacogenic uveitis, autoimmune haemolytic anaemia, idiopathic thrombocytopenic purpura, idiopathic leucopenia, primary biliary cirrhosis, active chronic hepatitis, cryptogenic cirrhosis, ulcerative colitis, Sjogren's syndrome, and mixed connective tissue disease.

5 39. A method of treatment or prevention of a disease state caused by the formation or complications of atherosclerotic lesions comprising inhibiting formation of said lesions or complications thereof by administering to a patient in need thereof an effective amount of a 10 compound according to any one of Claims 1 to 36.

10 40. A method of treatment of a disease which requires for therapy inhibition of a class II MHC-restricted immune response, comprising inhibiting said class II MHC-restricted immune response by administering to a patient in need thereof an effective amount of a 15 compound according to any one of Claims 1 to 36.

15 41. A method of treatment of a disease which requires for therapy inhibition of an asthmatic response, comprising inhibiting said asthmatic response by administering to a patient in need thereof an effective amount of a compound according to any one of Claims 1 20 to 36.

42. A method of treatment of a disease which requires for therapy inhibition of an allergic response, comprising inhibiting said allergic response by administering to a patient in need thereof an effective amount of a compound according to any one of Claims 1 to 36.

25 43. A method of treatment of a disease which requires for therapy inhibition of an immune response against a transplanted organ or tissue, comprising inhibiting said immune response against a transplanted organ or tissue by administering to a patient in need thereof an effective amount of a compound according to any one of Claims 1 to 36.

30 44. A method of treatment of a disease which requires for therapy inhibition of elastase activity in atheroma, comprising inhibiting said elastase activity in atheroma by administering to a patient in need thereof an effective amount of a compound according to any one of Claims 1 to 36.

35

45. Use of a compound according to any one of Claims 1 to 36 in the manufacture of a medicament for use in inhibiting cathepsin S.

46. Use of a compound according to any one of Claims 1 to 36 in the manufacture of a medicament for use in treatment and prevention of an autoimmune disease.

47. A use according to Claim 46 wherein said disease is selected from the group consisting of: rheumatoid arthritis, multiple sclerosis, juvenile-onset diabetes, systemic lupus erythematosus, discoid lupus erythematosus, pemphigus vulgaris, pemphigoid, Grave's disease, myasthenia gravis, Hashimoto's thyroiditis, scleroderma, dermatomyositis, Addison's disease, pernicious anemia, primary myxoedema, thyrotoxicosis, autoimmune atrophic gastritis, stiff-man syndrome, Goodpasture's syndrome, sympathetic ophthalma, phacogenic uveitis, autoimmune haemolytic anaemia, idiopathic thrombocytopenic purpura, idiopathic leucopenia, primary biliary cirrhosis, active chronic hepatitis, cryptogenic cirrhosis, ulcerative colitis, Sjogren's syndrome, and mixed connective tissue disease.

48. Use of a compound according to any one of Claims 1 to 36 in the manufacture of a medicament for use in treatment or prevention of a disease state caused by the formation or complications of atherosclerotic lesions.

49. Use of a compound according to any one of Claims 1 to 36 in the manufacture of a medicament for use in treatment of a disease which requires for therapy inhibition of a class II MHC-restricted immune response.

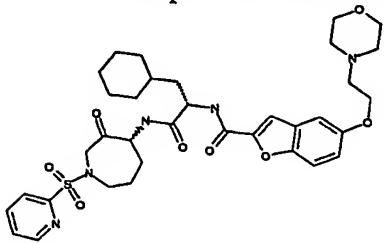
50. Use of a compound according to any one of Claims 1 to 36 in the manufacture of a medicament for use in inhibition of an asthmatic response.

51. Use of a compound according to any one of Claims 1 to 36 in the manufacture of a medicament for use in inhibition of an allergic response.

52. Use of a compound according to any one of Claims 1 to 36 in the manufacture of a medicament for use in inhibition of an immune response against a transplanted organ or tissue.

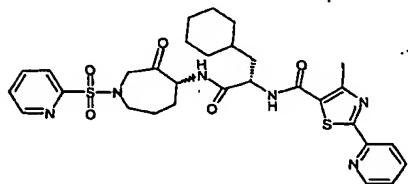
53. Use of a compound according to any one of Claims 1 to 36 in the manufacture of a medicament for use in inhibition of elastase activity in atheroma.

54. A compound selected from the group consisting of:



5 5-(2-morpholin-4-yl-ethoxy)-benzofuran-2-carboxylic acid ((S)-2-cyclohexyl-1-[3-oxo-1-

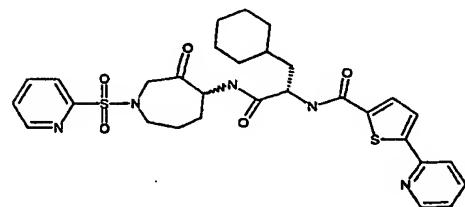
5 (pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl)-amide;



4-methyl-2-pyridin-2-yl-thiazole-5-carboxylic acid ((S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-

2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl)-amide;

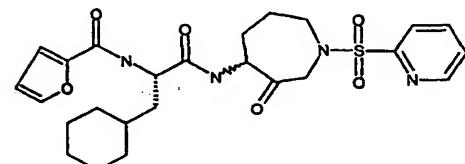
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5-pyridin-2-yl-thiophene-2-carboxylic acid ((S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-

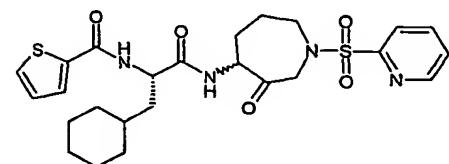
sulfonyl)-azepan-4-ylcarbamoyl]-ethyl)-amide;

15

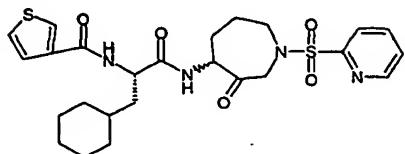


furan-2-carboxylic acid ((S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-

ylcarbamoyl]-ethyl)-amide;

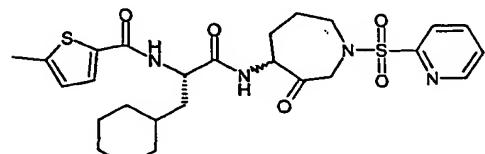


thiophene-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



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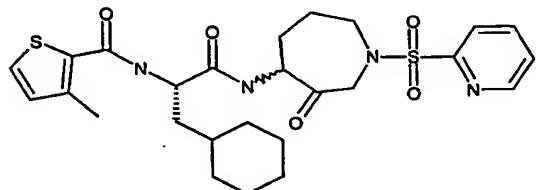
thiophene-3-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



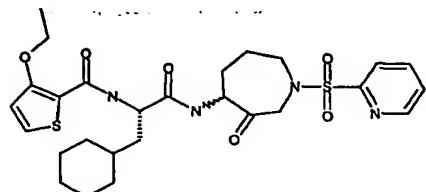
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5-methyl-thiophene-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;

15

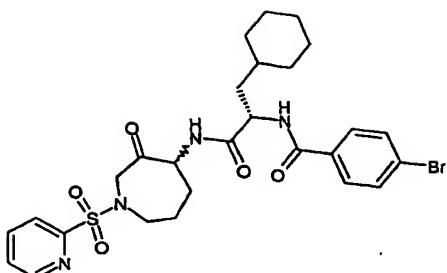


3-methyl-thiophene-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;

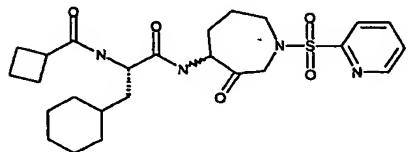


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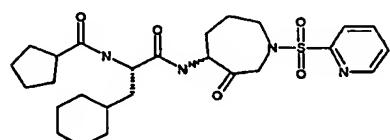
3-ethoxy-thiophene-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



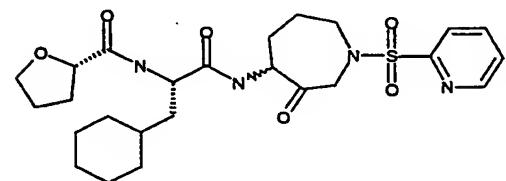
4-bromo-N-{(S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-benzamide;



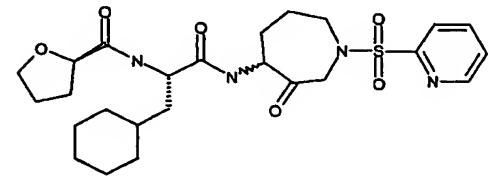
5 cyclobutanecarboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



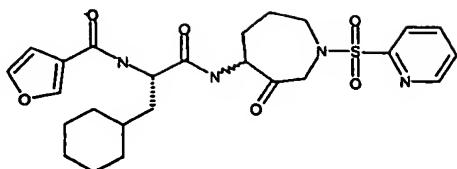
10 cyclopentanecarboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



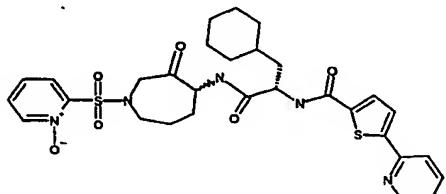
15 (S)-tetrahydro-furan-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



(R)-tetrahydro-furan-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;

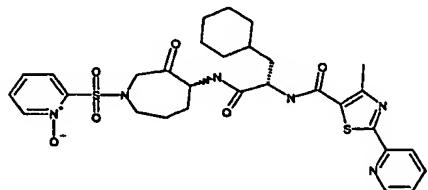


furan-3-carboxylic acid ((S)-2-cyclohexyl-1-[3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl)-amide;

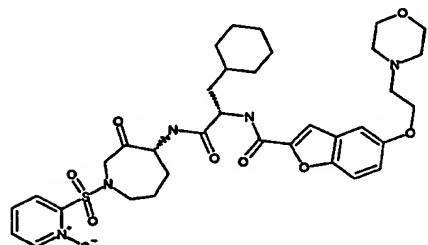


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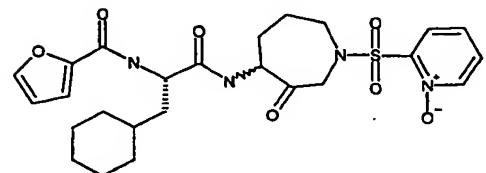
5-pyridin-2-yl-thiophene-2-carboxylic acid ((S)-2-cyclohexyl-1-[3-oxo-1-(1-oxy-pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl)-amide;



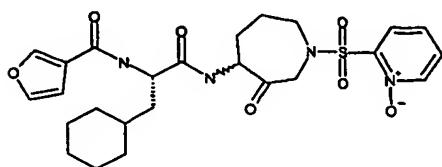
10 4-methyl-2-pyridin-2-yl-thiazole-5-carboxylic acid ((S)-2-cyclohexyl-1-[3-oxo-1-(1-oxy-pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl)-amide;



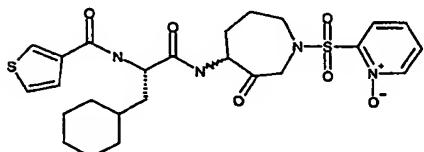
15 5-(2-morpholin-4-yl-ethoxy)-benzofuran-2-carboxylic acid ((S)-2-cyclohexyl-1-[3-oxo-1-(1-oxy-pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl)-amide;



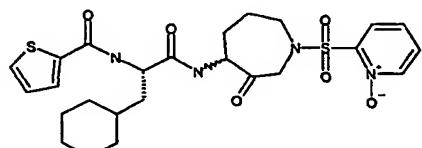
furan-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(1-oxy-pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



5 furan-3-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(1-oxy-pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;

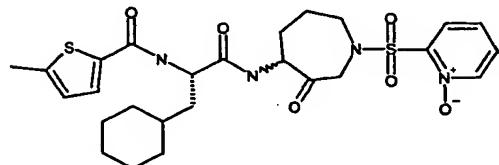


10 thiophene-3-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(1-oxy-pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



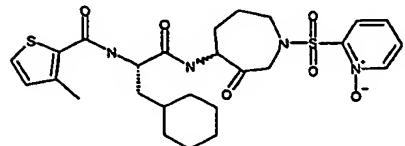
thiophene-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(1-oxy-pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;

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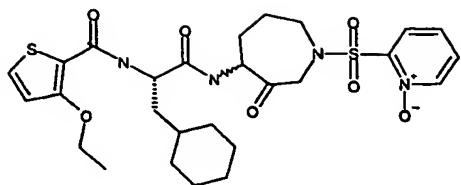


5-methyl-thiophene-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(1-oxy-pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;

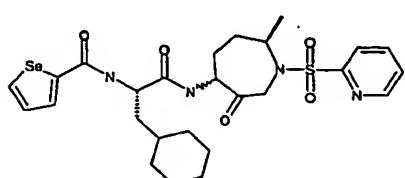
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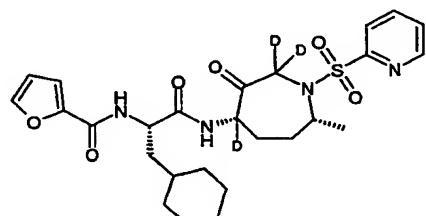
3-methyl-thiophene-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(1-oxy-pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



5
3-ethoxy-thiophene-2-carboxylic acid {(S)-2-cyclohexyl-1-[3-oxo-1-(1-oxy-pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide;



and
selenophene-2-carboxylic acid {(S)-2-cyclohexyl-1-[{(R)-7-methyl-3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl}-ethyl]-amide}; and



2,2,4-trideutero-Furan-2-carboxylic acid {(S)-2-cyclohexyl-1-[(4S,7R)-7-methyl-3-oxo-1-(pyridine-2-sulfonyl)-azepan-4-ylcarbamoyl]-ethyl}-amide.